


In re the Application of  : Docket No. 0805774-0004
Mark Alistair POLETTI : Art Unit 2643
Application No. 09/197,096 : Examiner LAO, LUN S
Filed: November 20, 1998 :
For: An Improved Guitar Preamplifier System With Controllable Distortion

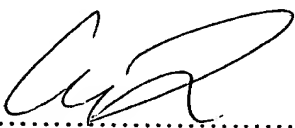
DECLARATION

I, COLIN FOX, declare:

1. I am Head of the Acoustics Research Centre at the University of Auckland, New Zealand and have held this position since 1998. I have been a member of the Applied Mathematics Unit within the Mathematics Department of The University of Auckland since 1990.
2. I obtained a PhD degree from the University of Cambridge in 1989. The subject of my doctoral thesis was electrical impedance tomography within the departments of Physics and Applied Mathematics. I obtained BSc in Pure Mathematics and Physics from The University of Auckland in 1981, receiving the Senior Prize in Pure Mathematics and the Senior Prize in Physics. I obtained MSc with First Class Honours in Physics from the University of Auckland in 1983.
3. My areas of expertise and research include inverse problems, signal processing, wave propagation in electrical and mechanical systems, Bayesian inference, analogue and digital electronics for audio reproduction and computation, computational spectral analysis. I attach a copy of my CV and/or list of papers I have had published in peer review journals and conference papers I have presented.
4. I have been requested to review US patent 5,892,833 to MAAG (herein "Maag"). I have also reviewed a copy of what I am instructed is a copy of US patent application 09/197,096 (herein "the Poletti patent application"), the simulations described in paragraphs 10 and 11 of a declaration by Mark Poletti dated 25 February 2004, and a copy of an Office Action from the US Patent Office dated 24 May 2004.

5. I understand the Maag patent to describe a graphic equalizer for audio application, consisting of multiple filter banks with adjustable gain and summation, giving both analogue and digital electronic implementation.
6. The simulation described in paragraphs 10 and 11 and Fig. 1 of the Poletti declaration is in my opinion correct. Assuming that the individual channel filters of Maag have different centre frequencies, the term "equi-phase" could only correctly be applied to the output of the bands when summed together (with equal gain in each band and not with any other setting). This is consistent with the claim made by Maag.
7. At frequencies between the centre frequencies of adjacent filters (above the centre frequency of one filter and below the centre frequency of the next) and within the intended range of operation the adjacent filters described in Maag have different phase responses. This is very easy to show, for both the analogue and digital filters that Maag uses. It is shown by the simulations described in the Poletti declaration where, for example, the phase shift of the 300 Hz signal at the output of the individual filters is clearly different, for every filter bank.
8. Clearly the Maag filters, assuming that the centre frequencies of the filters are different so as to split the input signal into different frequency bands, do not have an equi-phase response. That is the signal at a given frequency passed by two filters which have appreciable response at that frequency, will not be in phase.
9. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such wilful false statements may jeopardize the validity of this Application for Patent or any patent issuing thereon.

DECLARED at The University of Auckland
Auckland, New Zealand)
this 15 day of November 2004)


.....
COLIN FOX

Colin Fox - CV

Nationality: New Zealand

Postal: Department of Mathematics
The University of Auckland
Private Bag 92019, Auckland
New Zealand

Email: fox@math.auckland.ac.nz

WWW: http://www.math.auckland.ac.nz/~fox

Mob: (64) 021 438 369 (get fox)

EDUCATIONAL QUALIFICATIONS:

1988 Cambridge University, PhD in Physics: Radio Astronomy, Thesis "Conductance Imaging"
(1987: awarded the University's Lundgren Award for PhD thesis)

1983 University of Auckland, MSc in Physics, Thesis "An Acoustic Direction Finder", First Class Honours

1981 University of Auckland, BSc in Mathematics, Senior Prizes in Pure Mathematics and Physics

EMPLOYMENT:

1998-present The University of Auckland – Senior Lecturer in Mathematics, Head of Acoustics Research Centre

1987-1988 The University of Auckland -- Lecturer in Mathematics and Statistics

1987-1989 University of Otago – Postdoctoral fellow in Mathematics

1987-1990 Schlumberger Cambridge Research, Research Scientist

1981-1984 Partner -- Aleph Electronics

VISITING POSITIONS:

2004 Suomen Matemaattinen Yhdistys (Finnish Mathematical Society) and Kuopio University -- Invited Researcher, Finnish Theme Year on Inverse Problems .

2002 Investigador Titular "A", Departamento de Probabilidad y Estadística, CIMAT, Guanajuato, México

1999 University of Cambridge – Visiting Research Fellow, Engineering Department

1997 Otago University – Visiting Research Fellow

1993 Clarkson University -- Visiting Scientist

PROFESSIONAL MEMBERSHIPS:

Society of Industrial and Applied Mathematics SIAM 1998-present

Acoustical Society of America – elected member 2002

New Zealand Mathematical Society

New Zealand Acoustical Society

Institute of Electrical and Electronic Engineers IEEE – member since 1984

GRADUATE STUDENTS:

15 MSc and 5 PhD students completed

RESEARCH PUBLICATIONS:

Refereed Journal Articles:

- CHRISTEN, J. ANDRÉS. AND FOX, COLIN, 'Mcmc using an approximation', Journal of Computational and Graphical Statistics, accepted (2004).
- JAMES SNEYD, M. FALCKE, J.-F. DUFOUR AND C. FOX, 'A Comparison Of Three Models Of The Inositol Trisphosphate Receptor'. Progress In Molecular Biology And Biophysics, In the press (2004).
- HYUCK CHUNG AND COLIN FOX. 'Propagation of flexural waves at the interface between floating plates'. International Journal of Offshore and Polar Engineering', accepted July 2002.
- COLIN FOX AND GEOFF NICHOLLS. 'Statistical Estimation of the Parameters of a PDE'. Canadian Applied Mathematics Quarterly, accepted May 2002.
- EMMS, G.W. , FOX, C. 'Control of sound transmission through an aperture using active sound absorption techniques: a theoretical investigation'. *Applied Acoustics* **62**, 735-747, 2001.
- CHUNG, H. , FOX C. 'Calculation of wave-ice interaction using the Wiener-Hopf technique. *New Zealand Journal of Mathematics*, (accepted March 2001).
- LANGHORNE, P. J., SQUIRE, V. A., FOX, C. AND HASKELL, T.G. 'Lifetime estimation for a fast-ice sheet subjected to ocean swell'. *Annals of Glaciology*. **33**, 333-338, 2001.
- FOX, C., HASKELL, T.G., CHUNG, H. 'Dynamic, in-situ measurement of sea-ice characteristic length'. *Annals of Glaciology* **33**, 339-344, 2001.
- FOX, C., HASKELL T.G. 'Ocean wave speed in the Antarctic MIZ'. *Annals of Glaciology* **33**, 350-354, 2001.
- CHUNG, H. FOX C. 'Calculation of wave-ice interaction'. *Annals of Glaciology* **33**, 322-326, 2001.
- FOX, C., NICHOLLS, G. AND PALM, M. 'Efficient solution of boundary-value problems for image reconstruction via sampling'. *Journal of Electronic Imaging*, 9(3) 251-259, July 2000.
- FOX, C., PALM, M. AND NICHOLLS, G. K. 'Efficient, exact PDE solutions for MCMC'. in *Mathematical Modeling, Bayesian Estimation and Inverse Problems*, Proc. SPIE 3816, 23-30, 1999.
- LANGHORNE, P. J., SQUIRE, V. A. , FOX, C. AND HASKELL, T.G. 'Breakup of Sea Ice by Ocean Waves'. *Annals of Glaciology*, 27, 438-442, 1998.
- FOX, C. AND NICHOLLS, G. K. 'Physically-based likelihood for ultrasound imaging', *Bayesian Inference for Inverse Problems*, Proc. SPIE 3459, 92—99, 1998.
- NICHOLLS, G. K. AND FOX, C. 'Prior modelling and posterior sampling in impedance imaging'. *Bayesian Inference for Inverse Problems*, Proc. SPIE 3459, 116—127, 1998.
- FOX, C., 'Real-Time Audio Processing on a PC'. *Journal of the New Zealand Acoustical Society*, 11-26, February 1997.
- MEYLAN, M., SQUIRE, V.A. AND FOX, C. 'Towards Realism in Modelling Ocean Wave Behavior in Marginal Ice Zones'. *Journal of Geophysical Research*, 102, 22981-22991, October 15, 1997.
- FOX, C. AND SQUIRE, V.A. 'On the oblique reflexion and transmission of ocean waves at shore fast sea ice'. *Phil Trans R. Soc. Lond. A* 347, 185-218, 1994.
- FOX, C. AND SQUIRE, V.A. 'Coupling between the ocean and an ice shelf'. *Annals of Glaciology* 15, 101-107, 1991.
- FOX, C. AND SQUIRE, V.A. 'Strain in Shore Fast Ice due to Incoming Ocean Waves and Swell'. *Journal of Geophysical Research* 96-C3, 4531-4547, March 15, 1991.
- SQUIRE, V.A. , FOX, C. 'The role of incoming waves in ice edge dynamics'. *Annals of Glaciology* 15, 96-100, 1991.
- FOX, C., SQUIRE, V.A. , 'Reflection and transmission characteristics at the edge of shore fast sea ice'. *Journal of Geophysical Research* 95-C7, 11,629-11,639, July 15, 1990.

Papers in Refereed Conference Proceedings:

- FOX, C., BALLAGH, K. 'In situ measurement of power flow and mechanical properties of vibrating timber structures'. InterNoise 2001, The 2001 International Congress and Exhibition on Noise Control Engineering, The Hague, The Netherlands, August 27-30, 2001.
- FOX, C., G.K. NICHOLLS, G.K. 'Exact MAP states and expectations from perfect sampling: Greig, Porteous and Seheult revisited'. *Bayesian Inference and Maximum Entropy Methods in Science and Engineering, 20th International Workshop* (Gif-sur-Yvette), 8-13 July 2000, edited by Ali Mohammad-Djafari, AIP Conference Proceedings volume 568, 252-263, American Institute of Physics, New York, 2001.
- FOX, C. 'Scaling laws for flexural waves in floating ice'. Proceedings of IUTAM: *Scaling Laws in Ice Mechanics and Ice Dynamics*, J.P. Dempsey, H.H. Shen, L.H. Shapiro (eds) University of Alaska Fairbanks, June 13-16, 2000.
- FOX, C. 'Measurement of directional wave spectra in fast ice'. In *Ice in Surface Waters 2*, Proceedings of the 14th International Symposium on Ice. H.T. Shen, ed. Balkema, Rotterdam, 849-853, 1999.
- DEMPSEY, J.P., FOX, C., PALMER, A.C. 'Ice-slope interaction: transitions in failure mode'. In Proceedings of OMAE99, 18th International Conference on Offshore Mechanics and Arctic Engineering, July 11-16, St. Johns, Newfoundland, Canada, 1999.
- FOX, C. AND NICHOLLS, G. 'Sampling Conductivity Images via MCMC'. In: *The Art and Science of Bayesian Image Analysis*, K.V. Mardia, C.A. Gill, R.G. Aykroyd eds, Proceedings of the Leeds Annual Statistical Research Workshop (LASR), 91-100, July 1997, Leeds University Press, 1997.
- WILCOCKS, L., FOX, C., Measurement of Ice-Coupled Wave Coherence in McMurdo Sound. In proceedings of Joint Assembly of IAMAS/IAPSO, Melbourne, July 1997.
- MEYLAN, M., FOX, C., 'A Model for the Propagation of Waves through the MIZ from a Single Floe Solution'. Proceedings of the Sixth International Offshore and Polar Engineering Conference, USA, 321-327, May 1996.
- EMMS, G., AND FOX, C., Sound power absorption by monopoles near a window: a theoretical investigation. Proc. 13th Biennial Conference of the New Zealand Acoustical Society, Auckland, August 1995.
- FOX, C. 'The Response of a Floating Ice-Sheet to Rapid Edge Loading'. AMD-Vol. 163, *Ice Mechanics*, ASME 145-150, 1993.
- SQUIRE, V.A., ROTTIER, P., FOX, C., 'A first look at some wave-ice interaction data from McMurdo Sound, Antarctica. *Int. Symp. on Sea Ice*, Beijing, 1993.
- FOX, C. 'Large Amplitude Sea/Ice Coupling'. In Murthy, TKS, Sackinger, WM, and Wadhams, P., ed. *Advances in Ice Technology*, 3rd Int. Conf on Ice Technology, Cambridge, MA, USA, Computational Mechanics Publications, 291-304, 1992.
- SQUIRE, V.A. AND FOX, C. 'On Ice Coupled Waves: A Comparison of Data and Theory'. In Murthy, TKS, Sackinger, WM, and Wadhams, P, ed. *Advances in Ice Technology*, Proc 3rd Int. Conf on Ice Tech, Cambridge, MA, USA, Computational Mechanics Publications, 269-280, 1992.
-



COPY

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of : **Docket No. 0805774-0004**
Mark Alistair POLETTI : **Art Unit 2643**
Application No. 09/197,096 : **Examiner LAO, LUN S**
Filed: November 20, 1998 :
For: An Improved Guitar Preamplifier System With Controllable Distortion

DECLARATION

I, BILL (CHARLES WILLIAM BREMNER) WOOD, declare:

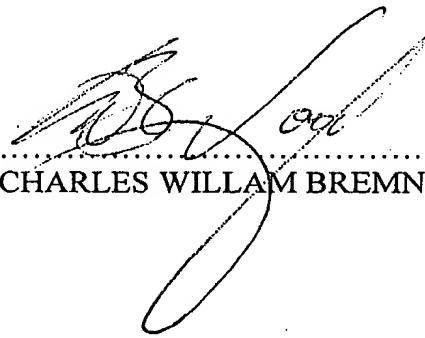
1. I am a musician who has been playing music since my school days, a period of around 30 to 35 years. I have formally studied classical violin and have passed Grade 5 music theory. Since that early beginning I have been involved with music on a constant (but not professional) basis; I have played many different styles of music as both a bassist and then as a guitarist, and have toured New Zealand and Australia several times with various bands. Additionally I have played on many recording projects, some as enlisted "session" musician for other artists, and some as a member of the band whose music is being recorded.
2. My current profession is that of an acoustical consultant/researcher with a leading New Zealand acoustics firm. In this occupation I have been involved with many different aspects of acoustics including: studio design; architectural acoustics; research into traffic noise and its effects on the local community; health effects of noise in the workplace; and other environmental acoustical considerations.
3. I have recently had the opportunity to use an amplifier equipped with Mark Poletti's VariState preamp, which I am advised is the subject of US patent application 09/197,096. It was used for a recording session, and miked using a large diaphragm condenser microphone. I was playing a Gibson Epiphone Les Paul

guitar equipped with humbucking pickups – a relatively standard type of guitar, of a type universally used on many recordings.

4. Situations such as this style of recording always seem to reveal any idiosyncrasies, tonal or otherwise, of any guitar/amplifier/effects chain used for the recording, and can provide a more objective sense of the setup than merely playing and listening in a 'live' situation.
5. Up to this point, I have been of the belief that the only way of achieving good tone is through the use of valve (tube) amplification. However, while playing, and (perhaps more importantly) on listening to the playback I was impressed with the tonal quality of this amplifier.
6. I have been playing electric guitar for 30 years and the quest for "good tone" has been unending. This has involved trialing many different guitar amplifiers over many years, from relatively cheap solid state amplifiers to high-priced valve (tube) amplification produced by specialist boutique manufacturers, mainly of American or UK origin.
7. While a guitar player can obtain a fully overdriven hard rock style of sound with some amplifiers and/or effects, obtaining the truly usable 'clean' sound that I require for the style of jazz/blues/swing that I now play seems to be a challenge for most manufacturers. It seems that many amplifier models achieve the hard rock sound to an acceptable degree, but the 'clean' tone remains flat and brittle.
8. Conversely, some amplifiers can achieve an acceptable 'clean' tone (but in my experience most are a flat, brittle sound as described above), and for some of the more well-known brands the distorted 'hard rock' tones are often harsh, sounding as though there is something at fault within the amplifier circuitry rather than a pleasing overdriven sound.

9. Having used the Poletti-designed amplifier in the recording as described above, and having had the opportunity to audition the overdriven 'hard rock' sounds that it is capable of, it is in my opinion one of the most flexible guitar amplifiers I have used.
10. It appears to excel at the tonal range that most guitar players would require of any one amplifier, from 'clean' through to 'wildly overdriven' while losing none of its quality of sound. At even extremely overdriven levels the tone structure of the particular instrument used was maintained, while its coherence enabled reasonably complex chord voicings to be used, which is usually beyond the capability of most other amplifiers which can produce this level of overdrive.
11. In summary, the Poletti Varistate preamp seems to me to be a step forward into new thinking in amplifier design, and it is the best performing new pre-amp I have heard for some time.
12. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such wilful false statements may jeopardize the validity of this Application for Patent or any patent issuing thereon.

DECLARED at)
 Wellington, New Zealand)
 this 16th day of November 2004)



 CHARLES WILLIAM BREMNER WOOD

CHOATE HALL & STEWART

VENDOR #		VENDOR NAME			CHECK #	CHECK DATE
11598		Comm of Patents & Trademarks			345001	11/22/2004
VOUCHER #	INV DATE	INVOICE #	COMMENTS	GROSS	DISCOUNT	AMOUNT PAID
324321	11/22/2004	112204T	0805774-0004	980.00	0.00	980.00
CHECK TOTALS				980.00	0.00	980.00



COPY

FLEET BANK N.A.
OPERATING ACCOUNT
BOSTON, MA

CHOATE HALL & STEWART
EXCHANGE PLACE
BOSTON, MA 02109-2891
(617) 248-5000

CHECK NUMBER: 345001
CHECK DATE: 11/22/2004
VENDOR NUMBER: 11598

5-13
110

NINE HUNDRED EIGHTY AND 00/100 DOLLARS

PAY TO THE ORDER OF

Comm of Patents & Trademarks
Alexandria, VA 22313-1450

COPY

VOID AFTER 180 DAYS

\$980.00*****

TWO SIGNATURES REQUIRED IN EXCESS OF \$20000

345001 011000138 0005422720